

TOGO

INTRODUCTION

Togo is worried about environmental problems, especially those concerning chemical substances. Thus government has signed many international conventions concerning the protection of health and the environment. About the protection of the ozone layer, it has adopted a number of regulations to help in the elimination process of ozone-depletion substances (ODS) and to substitute them with inoffensive substances. There have been many efforts in the information of the masses that use these substances. However research services in this domain have problems of absence of adequate scientific equipments to conduct follow up researches about the evolution of the atmospheric ozone layer. Our report gives an account of the activities conducted in Togo on the research projects which are being done or which will be done, what is needed to realize them adequately and recommendations in the fight against the impoverishment of the ozone layer.

RESEARCH ACTIVITIES

In **Togo** and at the University of Lomé precisely, research works on the throwing out of chemical substances in the environment are mainly done at the Faculty of Sciences by the laboratory **G T V D** (the waste management laboratory), the laboratory of atmospheric chemistry and the laboratory of water chemistry. These laboratories make environmental impact studies of the ecosystems and do physicochemical characterisations of the samplings.

But, since **Togo** does not have scientific equipments for the observation of the ozone, direct studies on the ozone are impossible. However, our country has a number of observation stations like the station of **Kouma- Konda** (in the south-west of **Togo**) but the activities of the observation station of **Kouma-Konda**, of the national service of meteorology are reduced to classical observations (temperature, pressure, raining) and are incapable of giving information about the evolution of the ozone layer. Though this station has been selected by the **G A W** programme to be rehabilitated for sub-regional needs, nothing has been done and it is still without evolution. Direct observations on the ozone are still impossible. Its rehabilitation is thus very necessary.

Without direct studies on the atmospheric ozone, the simulations initiated use information from the World Meteorological Organization and the National Oceanic Atmospheric Administration. Since the results obtained have not yet been validated, they have not been communicated to the centre for reference information.

Furthermore, since direct studies are impossible, and before we have simple means of observation of the ozone layer, the researches done in the domain of the ozone-depletion substances rather focus on the basic actions to take to reduce or eliminate or substitute these substances.

In this perspective, we have recently begun (**Prof Gnon BABA**) with the support of the University of Lomé, a research on the theme « **Evaluation des capacités techniques nationales d'observation et d'estimation des rejets de substances chimiques dans l'environnement, constitution d'une banque de données: Etudes préliminaires** » (Evaluation of the national technical capacities for the observation and estimation of the rejection of chemical substances in the environment, constitution of a data Bank: preliminary studies). This work, in fact constitutes a preliminary step for a vast programme that we are thinking of concerning the chemical substances which are thrown out in the nature everyday and which obviously have negative effects on the environment and public health, especially the **ODS**.

Furthermore, because of the interactions between the evolution phenomena of the ozone and those related to climate changing, our researches are also done on precursor gas. The laboratory **GTVD** is also currently conducting researches on substances often derived from burning or refuse incineration. In fact, household and hospital refuses are often burned in the open air because of

the lack of incinerators and equipments of smoke neutralization. Researches are conducted then on the emission of direct gas such as CO₂, CH₄ and N₂O or indirect ones such as the carbon monoxide (CO), the volatile organic compounds and the nitrogen oxides (NO_x) whose effects seem often neglected.

Among the various works, it is necessary to mention the development by Togo of its control plan for refrigerating fluids granting a number of workshops CFC recuperation and recycling equipments with the help of the UNDP and the UNEP.

The same way, campaigns are organized by the environment head office, to sensitize the people on the consequences of the impoverishment of the ozone layer and the UV increase in the atmosphere which have negative consequences on health and the environment. Training workshops are also organized and have helped refrigerating engineers, who are the main manipulators of the CFC, to acquire the appropriate techniques.

Finally apart from students' long essays relating to themes about the ozone, professors Ayité-Lô Nohende Ajavon and Gnon BABA from the university de Lomé have also contributed to the writing of the Review ***Scientific Assessment of Ozone Depletion:2006***

The research activities can produce expected results if the projects and perspectives have the appropriate support.

PERSPECTIVES, PROJECTS AND COLLABORATIONS

Perspectives and research projects

We are thinking of research projects and perspectives to bring an important contribution to the fight against the impoverishment of the ozone layer. They are:

- The follow up for the evolution of the atmospheric ozone layer.
- Research for new inoffensive substances.
- Rehabilitation of the **Kouma-Konda** station.
- Follow up for the process of reduction and elimination of the **ODS**.
- Research for cheap alternatives.
- Exploration of how to make synthesis of the atmospheric detergents.
- Recuperation, reduction and/or elimination of the **ODS** with simple instruments for research purposes.
- Inventory and identification of air pollutants in general.

COLLABORATIONS

The lack of adequate scientific services in the universities of Togo weakens their collaboration at the national level with other partners concerned with the **ODS**. We consider that only collaborations with international institutions like UNEP, the UNDP, WMO, the NEPAD, European Union, the NOAA, the Ozone Secretariat, can help in the research activities conducted in Togo in the fight against the impoverishment of the ozone layer.

NEEDS AND RECOMMENDATIONS

In order to realize the perspectives and projects enumerated above, a number of things are needed, some of which we are going to enumerate also as recommendations.

Needs

- Fully equipped and simple scientific services for the observation and the follow up for the evolution of the atmospheric ozone for research purposes.

- Small scientific equipments for the recuperation and the recycling of the **ODS** which involve research services.
- Financial supports to laboratories on the basis of the projects submitted for research activities.
- Collaborations with international institutions and developed countries.

Recommendations

- The Rehabilitation of the Koum-Konda station for the follow up of the evolution of the atmospheric ozone in the sub-region.
- Sustained attention to research services in developing countries.
- Material and Financial supports to research laboratories in developing countries.
- Creation in Africa, of a regional centre for researches on the interactions between the ozone and climate changing.
- Initiation of Sub-regional research projects involving scholars from many countries.
- Promotion of research services in developing countries because their works are always neglected.
- Creation of international and regional networks for exchanging information and experience on the SAO, and even the actions conducted in every country/region.
- Involvement of industrialists in the search for solutions related to SAO.
- More sensitizing for decision makers for more involvement in the research for solutions to environmental problems in general.

CONCLUSION

In Togo, like in other developing countries, despite the consciousness of government and scholars on the damages of the SAO, research actions about the protection of the ozone layer, are still slow even though they are fascinating. We have given in this report an account of the main research activities about the protection of the ozone layer. This kind of research needs specific investments. The researches we are planning will be successful only if they have the multiform assistance that we have also enumerated. If our recommendations are taken seriously, they can help advance the research on the SAO in a much sustained way.
